

## ON THE NOMENCLATURE AND CHARACTERISTICS OF THE LAMPREYS.

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IN 1870, Dr. Günther took up the name *Petromyzon branchialis* for what was before generally called *P. planeri*. In 1882, assuming the correctness of that determination and that there were good reasons for the identification, I accepted it and also the name *Ammocetes*, based on the *P. branchialis*, for the genus called *Lampetra* by Gray. It was with much reluctance that I took such a step, and only in deference to the rules of nomenclature regulating such cases, common among the aclephs, especially the hydroids, but rare among vertebrates. The reluctance to adopt the name *Ammocetes* with this new range has, I am sure, been shared by many others, and expression has lately been given to it by Prof. Gage in his valuable memoir on "The Lake and Brook Lampreys of New York" (Wilder book, p. 437). Prof. Gage's own researches appear to furnish a perfectly legitimate way out of the dilemma.

According to Prof. Gage (*op. cit.*, p. 456), "up to the present time there has been no way discovered of distinguishing the larvæ of the lake and of the brook lamprey. As the two species occupy the same spawning ground and sometimes spawn in the same nest great care is necessary in order not to confuse the two. After the larvæ leave the nest they apparently go to the same sand bed."\*

\* The after life of the species is, however, quite different.

"The brook lamprey does not apparently increase in length after transformation, for many of the transformed ones at the spawning season are of less size than the just transformed ones."

"The lake lamprey upon transforming is only about one-half to one-fourth the length and probably not one-tenth bulk of the spawning ones." (Gage, *op. cit.*, pp. 452, 453.)

A lamprey half the length of another would equal an eighth of the bulk, and one a fourth the length would only reach one-sixty-fourth the bulk, if the proportions corresponded.

As Prof. Gage had unusual opportunities for investigation, and "since 1875 lost no opportunity of studying the lampreys at all stages of life" (*op. cit.*, p. 423), his conclusions are especially valuable, and may be safely used in a reconsideration of the question of nomenclature.

Why has *Ammocetes branchialis*, then, been identified specifically with *Petromyzon planeri*, thus necessitating the restoration of the former name?

#### AMMOCETES COMMON TO ALL ARCTOGÆAN LAMPREYS.

The memorable researches of Dr. August Müller, resulting in the discovery that an *Ammocetes* was simply a larva of a lamprey, happened to be conducted where the *Petromyzon planeri* was the species at hand, and, inasmuch as the larvæ in his possession developed into *Petromyzon planeri*, the identification was correct. The mistake (if it can be considered as such) was in assuming that every *Ammocetes* was a larval *Petromyzon planeri*, and that the *Ammocetes* or *P. branchialis* of Linné was specifically identical with *P. planeri* and with that alone.

It now appears that what would be determinable as an *Ammocetes branchialis* may be the larva of any arctogæan lamprey, inasmuch as the lake lamprey (*Petromyzon marinus* var.) and brook lamprey (*Lampetra* sp.\*) are most distinct from each other. Inasmuch also as the sea lamprey (*Petromyzon marinus*) ascends fresh-water streams to breed, there was no reason for identifying *P. branchialis* with one rather than another species, the definition applying to one as well as to another, and doubtless the larvæ of the three European species (*P. marinus*, *P. fluviatilis*, and *P. planeri*) have been frequently, if not habitually, confused. It follows, therefore, that *P. branchialis* (Linné) and *Ammocetes* are generic rather than specific synonyms and should be so treated. The name *Lampetra* may be, consequently, revived for the fresh-water lampreys of Europe and eastern America and the synonymy digested as follows.

#### SYNONYMY.

##### Genus PETROMYZON.

- < *Petromyzon*, LINNÆUS, Syst. Nat., ed. 10., v. 1, p. 230, 1758.
- < *Petromyzon*, (DUMÉRIEL) CUVIER, Règne Animal, t. 2, p. 118, 1817.
- < *Ammocetes*, (DUMÉRIEL) CUVIER, Règne Animal [1<sup>e</sup> éd.], t. 2, p. 119, 1817 (based on larval form).
- = *Petromyzon*, GRAY, Proc. Zool. Soc. London, pt. 19, pp. 235, 236; List Specimens Fish Brit. Mus., pt. 1, p. 137, pl. 1, f. 1 (mouth), 1851.
- = *Lampetra*, MALM, Forhandl. Skand. Naturf., 8. möde, p. 580, 1860.
- < *Petromyzon*, GÜNTHER, Cat. Fishes Brit. Mus., v. 8, p. 500, 1870.

\* The specific identity of either the European *Lampetra planeri* or *L. fluviatilis* with an American species is very doubtful and at least requires verification.

## Genus LAMPETRA.

- ?? *Lampreda*, RAFINESQUE, *Analyse de la Nature*, p. 94 (without description or typonym), 1815.
- ?? *Pricus*, RAFINESQUE, *Analyse de la Nature*, p. 94 (without description or typonym), 1815.
- = *Lampetra*, GRAY, *Proc. Zool. Soc. London*, pt. 19, pp. 235, 237, 1851; *List Specimens Fish Brit. Mus.*, pt. 1, pp. 137, 140, pl. 1, f. 2 (mouth), 1851.
- ? *Scolecossoma*, GIRARD, *Expl. and Surveys for R. R. Route to Pacific Oc.*, v. 10. *Fishes*, p. 384, 1858 (based on larval form).
- = *Petromyzon*, MALM, *Forhandl. Skand. Naturf.*, 8. möde, p. 580, 1860.
- = *Ammocetes*, GILL, *Proc. U. S. Nat. Mus.*, v. 5, p. 523, 1883.
- Petromyzon* sp. auct. pl.
- Ichthyomyzon* sp., GIRARD.

## FAMILIES.

In 1870 Dr. Günther united the genera *Caragola* and *Mordacia* of Gray, the former of which was based on specimens with the lateral corneous lamellæ preserved, while the latter was founded on a specimen in which they were lost and only exhibiting a single papillary prominence for each. For the combination he preferred the second name of Gray (*Mordacia*), based on a mutilated individual. In 1882 I used in preference the first name (*Caragola*), based on a perfect individual. I have since been led to believe that the precedence of one name by such a little margin as *Caragola* has over *Mordacia* has no value, and that aptness of diagnosis, however desirable, is not necessary to secure priority, and I have therefore followed Dr. Günther in accepting the name *Mordacia* instead of *Caragola*. I have also deemed it proper to elevate the subfamily *Caragolinae* to family rank, and named it *Mordaciidae*. References follow.

## Family MORDACIIDÆ.

- = *Caragolinae*, GILL, *Proc. U. S. Nat. Mus.*, v. 5, p. 524, 1882.
- = *Mordaciidae*, GILL, *Mem. Nat. Acad. Sc.*, v. 6, p. 129, 1893.
- Petromyzontide* pt., auct. pl.

Hyperoartia with two distant lateral tuberculigerous laminae developed from the upper arch of the annular cartilage.

The only known genus is *Mordacia*.

With this is to be contrasted the family *Petromyzonidae* as thus restricted, viz:

## Family PETROMYZONIDÆ.

- < *Petromyzontidae*, GILL, *Proc. U. S. Nat. Mus.*, v. 5, p. 521, 1882. (Full syn. given.)
- = *Petromyzontidae*, GILL, *Mem. Nat. Acad. Sc.*, v. 6, p. 129, 1893.

Hyperoartia with a single median tuberculigerous suproral lamina developed from the upper arch of the annular cartilage.

It behooves those who may object to these families to consider why

the character used to distinguish them is not of equal value with the union or separation of lower pharyngeal bones and like modifications generally used.

#### ORTHOGRAPHY.

In common with almost all other zoologists, I have used the name *Petromyzontida* for the lampreys. It only lately occurred to me that the form was a suspicious one at least, and, on investigation, I have been obliged to believe that it was due to a false analogy. Certainly the analogous Greek word  $\mu\acute{\omicron}\zeta\omega\nu$  has  $\mu\acute{\omicron}\zeta\omega\nu\omicron\varsigma$  in the genitive, and the corresponding Latin equivalents are *myxon* and *myxonis*. The first to use the form *Petromyzontida* appears to have been Prof. Agassiz, in 1850, in Lake Superior (p. 249), and the Edinburg New Philosophical Journal (v. 49, p. 242). It is probable that he was led to this form, without sufficient reflection, by being misled by analogy with words ending in *-odon* (*Tetraodon*, *Diodon*, etc.). Bonaparte had long before given the better form, *Petromyzonide*, and this should be revived.

#### EXOMEGAS.

The genus *Exomegas*, proposed in 1882 (Proc. U. S. Nat. Mus., v. 5, p. 524) for the *Petromyzon macrostomus* of Burmeister, has been justified by the recent publication of a memoir on the species by Dr. C. Berg,\* who has, however, referred it to the genus *Geotria*. I have recently called attention in Science for January 19, 1894 (v. 23, p. 30, "A South American lamprey"), to certain discrepancies between the description and figure and the advisability of reexamining the animal.

A detailed comparison of the contrasting skeletal peculiarities of *Petromyzon* and *Lampetra* is very much needed. It may be hoped that Prof. Gage will extend his investigations and give us the requisite information.

\*Anales del Museo de la Plata [etc.]. Seccion zoologica I. *Geotria macrostoma* (Burm.) Berg y *Thalassophryne montevidensis* Berg.—Buenos Aires—1893.